

Problem I. Subset sum

Input file: `stdin`
Output file: `stdout`
Time limit: 1.5 seconds
Memory limit: 512 megabytes

Given a set of integers $A = \{a_1, a_2, \dots, a_n\}$, print the least k sums among all non-empty subsets in sorted order.

Input

The first line contains 2 integers n, k ($1 \leq n \leq 200000, 1 \leq k \leq \min\{2^n - 1, 200000\}$).

The second line contains n integers $a_1, a_2, \dots, a_n$ ($|a_i| \leq 10^9$).

Output

k integers denote the least k sums.

Sample input and output

stdin	stdout
2 3 -1 1	-1 0 1
3 7 -1 0 1	-1 -1 0 0 0 1 1